A FLORISTIC SURVEY OF THE BEAR TRAP CANYON, MADISON COUNTY, MONTANA, WITH A DISCUSSION OF AUTHOR CITATIONS USING THE CONNECTING WORDS IN OR EX

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ABSTRACT: The results of a floristic survey of the Bear Trap Canyon are presented in the form of an annotated checklist. Two hundred and forty-two taxa are listed representing 162 genera and 50 families. Habitat and distributional data are provided for each taxon. The checklist is prefaced by a discussion of the topography and major plant community types of the area. Problems concerning author citations using the connecting words in or ex, and the consequences of their incorrect usage, are discussed.

A floristic survey of the Bear Trap Canyon, Madison County, Montana, was conducted during the summer of 1979 while the author was employed by the Butte District Office, Bureau of Land Management, U.S.D.I. The study was made in order to determine the total vascular plant flora of the area, as well as to assess the occurrence, frequency, and distribution of actually or potentially threatened or endangered plant taxa, in compliance with the Endangered Species Act of 1973 (Public Law 93-205).

The Bear Trap Canyon, also known locally as the Madison Canyon, is located on the Madison River 13 km by air (17 km by road) NNE of Ennis, MT, in an area where the river cuts through the Precambrian bedrock of the Norris Hills (de la Montagne, 1960). Here the river flows rapidly to the north, dropping from an elevation of 1470 m at Ennis Lake to approximately 1420 m at the Missouri Flats located at the north end of the canyon. Throughout much of its nearly 16 km length this sharply incised, V-shaped canyon is in excess of 400 m deep. A small dam, associated with the Madison Powerhouse, is situated about 3.5 km N of the entrance to the canyon, and a primitive settlement has been established at the confluence of Bear Trap Creek and the Madison River. An undeveloped trail runs along the E bank of the river.

The vegetation differs drastically between the E and W sides of Bear Trap Canyon. In general, the eastern slope (W-facing) has large stands of rich, fairly mesic forest dominated by Pseudotsuga menziesii var. glauca, which often extend down to the shores of the Madison River. Individuals of Pinus contorta var. latifolia occur in drier areas. A large number of herbaceous taxa is found in these forests, including Osmorhiza chilensis, Arnica cordifolia var. cordifolia, Mertensia oblongifolia var. oblongifolia,

Smilacina racemosa, S. stellata, Dodecatheon pulchellum ssp. pulchellum, Actaea rubra, and Clematis occidentalis var. grosseserrata. Interspersed among these forested areas are fairly moist to dry, open grasslands and rocky slopes. Four permanent creeks occur on this side of the canyon, as well as a number of intermittent drainages.

By contrast, the western slope of the canyon is quite xeric, with dry, open grassland (often with scattered sagebrush), rocky slopes, and very little forested area. No continuously flowing creeks are found on this side of the canyon, and only a few draws have water in the spring.

A borad diversity of habitat types occurs in the canyon bottom itself. Many aquatic and semi-aquatic plants are found along the banks of the Madison River, including large, somewhat scattered populations of Carex nebraskensis, C. brevior, Scirpus microcarpus, Juncus balticus var. vallicola, and Ceratophyllum demersum. The rocky banks of the river provide mesic habitats for many species that appear unable to tolerate long periods of submergence. Fairly large stands of Prunus virginiana var. melanocarpa, Salix exigua, and Sambucus racemosa ssp. pubens occur along the banks of the river, particularly toward the N end of the canyon. Betula occidentalis and Cornus sericea ssp. occidentalis form dense thickets along the lower parts of the tributary creeks, and a number of herbaceous taxa are restricted to the cool, moist shade they provide. Some of these are: Heracleum lanatum, Mertensia ciliata var. ciliata, Carex athrostachya, C. sprengelii, Streptopus amplexifolius var. chalazatus, Circaea alpina, Ribes hudsonianum var. petiolare, Viola praemorsa, and Platanthera dilatata var. dilatata.

Fairly large, open, seasonally moist meadows occur on the alluvial fans of the larger tributary creeks where they flow into the Madison River. These meadows exhibit more floristic diversity than any other single habitat type in the canyon. Conspicuous members of these communities include Senecio serra var. serra, Symphoricarpos occidentalis, Carex spp., Geranium richardsonii, Agastache urticifolia var. urticifolia, Monarda fistulosa var. menthifolia, Elymus cinereus var. cinereus, Phleum pratense, Delphinium occidentale, and Physocarpus malvaceus.

Much drier meadows and grasslands, often with Artemisia tridentata, occupy other level areas and open slopes along the river. The vegetation here resembles very much that found on the open areas higher up the canyon walls. Commonly encountered taxa of these habitats include several species of Lomatium, Balsamorhiza sagittata, Gaillardia aristata, Lupinus arbustus ssp. calcaratus, L. burkei ssp. burkei, Oxytropis lagopus var. lagopus, Agropyron trachycaulum var. unilaterale, Bromus inermis var. purpurascens, Dodecatheon conjugens var. conjugens, and Delphinium bicolor.

Dry rock outcrops are fairly common in the canyon bottom, as well as on its western slopes. These sites support a sparse vegetation which includes taxa such as Woodsia oregana, Erigeron caespitosus, Stephanomeria tenuifolia var. tenuifolia, Arenaria capillaris ssp. americana, Sedum lanceolatum ssp. lanceolatum, Bouteloua gracilis, Bromus tectorum, Festuca idahoensis, and Collomia linearis.

A number of weedy and introduced plants are found around the Madison Powerhouse, the settlement at Bear Trap Creek, and along the road and parking area at the N end of the canyon. These include some species which have escaped from cultivation and have become established in more or less disturbed areas, primarily along the trail.

Only one plant taxon observed within the Bear Trap Canyon is of possible significance as a threatened species, Phlox albomarginata. This plant is known only from the mountains of western Montana and eastern Idaho (Hitchcock and Cronquist, 1973). Although P. albomarginata may be fairly common in certain areas, it was included on a list of plants with restricted distributions in Montana prepared by R. D. Dorn (pers. comm.). This taxon is in need of further detailed study to determine whether it should be considered as a threatened species.

Collections were identified using Hitchcock and Cronquist (1973), and nomenclature follows Kartesz and Kartesz (1980), with the following exceptions; Carex (Hermann, 1970), Juncus (Hermann, 1975), Sisyrinchium (Henderson, 1976), Aster (identified by A. G. Jones) and Lomatium (identified by M. A. Schlessman). Three additional references were consulted to verify certain identifications (Booth, 1972; Booth and Wright, 1966; Hitchcock et al., 1955-1969). Voucher specimens are deposited in MONT, with many duplicates in MONTU and ILL.

All author citations in which the connecting words in or ex are used have been verified and agree with Recommendations 46C and 46D, respectively, of the International Code of Botanical Nomenclature (Stafleu et al., Editors, 1978). Verification of these author citations was necessary as many of them are incorrectly given in Kartesz and Kartesz (1980), as well as elsewhere in the literature.

The distinctions between citations using in and ex are extremely important, and often not fully appreciated. Abbreviation of citations in which ex is used incorrectly in the place of in results in authorship being attributed to the person publishing the name, rather than to the person actually responsible for both naming and describing the new taxon. Conversely, abbreviation in situations where in has been used incorrectly attributes authorship to the person who supplies only the name, excluding citation of the authority who actually described it.

For example, there is considerable confusion concerning the author citation for names supplied by Nuttall and published by Torrey and Gray in their Flora of North America (1838-1843). According to Ewan, in the introduction to the facsimile version of Torrey and Gray's Flora (1969:iii): "Thomas Nuttall had agreed in 1837 to furnish Torrey and Gray with descriptions of hundreds of new species which he had discovered in his western travels. These would carry his name as author." Clearly the descriptions for these taxa were supplied by Nuttall and merely published by Torrey and Gray. The correct author citation for these names is "Nuttall in Torrey and Gray," in accordance with Rec. 46D of the Code. Should it become necessary or desirable, for editorial reasons, to abbreviate this citation, the Code states (p. 40): "The name of the author who supplied the description or diagnosis is the most important and should be retained..." This citation is simply abbreviated as "Nuttall."

However, many authors of floristic and monographic works have incorrectly cited the authority of these names as "Nuttall ex Torrey and Gray," with potentially undesirable consequences (e.g., Hitchcock et al., 1955-1969; Kartesz and Kartesz, 1980). Recommendation 46C of the Code states (p. 40): "When an author who first validly publishes a name ascribes it to another person, the correct author citation of the name is the actual publishing author, but the name of the other person, followed by the connecting word ex, may be inserted before the name of the publishing author, if desired." Abbreviation of the author citation "Nuttall ex Torrey and Gray" would result in the citation of "Torrey and Gray" as authors of all the names furnished them by Nuttall. Clearly this is incorrect, as well as being contrary to the intentions of Torrey and Gray.

Author citations using the connecting word ex are reserved for situations where only the name is supplied by one person, the description or diagnosis being prepared by the publishing author. This is not the case with Nuttall's names, as he supplied carefully prepared descriptions with his specimens, albeit sometimes modified by Torrey and Gray. Unfortunately, many botanists have been careless in their use of the word ex in author citations, frequently applying it in situations where the word in should be used. This error has resulted in incorrect abbreviation of author citations such that only the publishing author is cited, at the exclusion of the name of the person who named and described the new plant. Errors of this sort are by no means restricted to Nuttall's names published in Torrey and Gray's Flora. The contrary situation, in which in is used improperly, is less common.

In the following checklist the taxa have been arranged alphabetically to family, genus, and species under the following categories: Sphenophytina (horsetails), Filicophytina (ferns), Coniferophytina (conifers), Magnoliopsida (dicotyledons), and Liliopsida (monocotyledons). The following abbreviations are

used to designate the habitat(s), frequency, and area(s) in which each taxon occurs:

aq	aquatic	pf	*Pseudotsuga* forest
cb	canyon bottom	ra	rare
co	common	rb	river banks
da	disturbed areas	ro	rock outcrops
dg	dry grasslands	sb	stream banks
he	higher elevations	sg	sagebrush grasslands
lo	local	sm	seasonally moist meadows
me	middle elevations	sp	sparse
mm	moist meadows	we	weedy
of	open forests	ws	widespread
os	open slopes		

SPHENOPHYTINA (Horsetails)

EQUISETACEAE

Equisetum fluviatile L. — da, sm; sp; cb

Equisetum pratense Ehrh. — mm, rb; sp; cb

FILICOPHYTINA (Ferns)

ASPLENIACEAE

Athyrium filix-femina (L.) Roth — pf; sp; cb

POLYPODIACEAE

Woodsia oregana D.C. Eat. — ro; sp; cb, me

CONIFEROPHYTINA (Conifers)

CUPRESSACEAE

Juniperus scopulorum Sarg. — of, rb; sp; cb

PINACEAE

Pinus contorta Dougl.
var. *latifolia* Engelm. — of, pf; sp; me, he

Pinus flexilis James — of, pf; sp; he

Pseudotsuga menziesii (Mirbel) Franco
var. *glauca* (Beissn.) Franco — pf; co; ws

MAGNOLIOPSIDA (Dicotyledons)

ACERACEAE

Acer glabrum Torr.
var. *douglasii* (Hook.) Dippell — pf, of; cb, me

ANACARDIACEAE

Rhus trilobata Nutt. — os, sg; co, lo; cb

Toxicodendron radicans (L.) Kuntze — os, rb; lo; cb

APIACEAE

Cicuta douglasii (DC.) Coult. & Rose — rb; sp; cb

Cymopterus bipinnatus S. Wats. — os, sg; sp; me, he

Heracleum lanatum Michx. — sb; co, lo; cb

Lomatium ambiguum (Nutt.) Coult. & Rose — ro, os; sp; cb

Lomatium cous (S. Wats.) Coult. & Rose — os, sg; cb, me
Lomatium dissectum (Nutt. in Torr. & Gray) Math. & Const. var. eatonii (Coult. & Rose) Cronq. — ro, os; sp; cb
Lomatium foeniculaceum (Nutt.) Coult. & Rose var. macdougalii (Coult. & Rose) Cronq. — sg; sp; cb
Lomatium triternatum (Pursh) Coult. & Rose ssp. platycarpum (Torr.) Cronq. — ro; co; cb, me
Musineon divaricatum (Pursh) Nutt. in Torr. & Gray — os, sg; ra; cb
Osmorhiza chilensis Hook. & Arn. — pf, os, sb; cb, me
Osmorhiza depauperata Phil. — sb, pf; sp; me
Perideridia gairdneri (Hook. & Arn.) Math. ssp. borealis Chuang & Const. — sm; sp; cb
Sium suave Walt. — rb; sp; cb

APOCYNACEAE

Apocynum androsaemifolium L. ssp. pumilum (Gray) Boivin var. pumilum — os, rb; sp; cb

ASTERACEAE

Achillea millefolium L. var. lanulosa (Nutt.) Piper — sm, os; co, ws
Antennaria microphylla Rydb. — os, ro; co; ws
Arctium minus (Hill) Bernh. — da, pf; sp, lo; cb
Arnica cordifolia Hook. var. cordifolia — of, pf; co; ws
Artemisia ludoviciana Nutt. — os, sm; sp; ws
Artemisia tridentana Nutt. — sg; co; ws
Aster conspicuus Lindl. in Hook. — sm; sp; cb
Aster hesperius Gray — rb; sp; cb
Aster occidentalis (Nutt.) Torr. & Gray — sb; sp; cb
Balsamorhiza sagittata (Pursh) Nutt. — sg; sp, lo; cb
Brickellia grandiflora (Hook.) Nutt. — pf, ro; sp; cb
Carduus nutans L. — os; lo, we; cb
Centaurea maculosa Lam. — os; lo, we; cb
Cirsium arvense (L.) Scop. var. horridum Wimm. & Grab. — os; sp, we; cb
Cirsium undulatum (Nutt.) Spreng. — dg; sp; cb
Cirsium vulgare L. — os, sm; sp, we; cb
Crepis acuminata Nutt. ssp. acuminata — os, sg; sp; ws
Erigeron caespitosus Nutt. — ro, os; lo; cb
Erigeron formosissimus Greene — ro, os; sp; ws
Erigeron speciosus (Lindl.) DC. var. macranthus (Nutt.) Cronq. — mm, sm, pf; co; ws
Erigeron strigosus Muhl. var. strigosus — sg; sp, we; cb
Erigeron subtrinervis Rydb. var. conspicuus (Rydb.) Cronq. — sm; sp; cb
Euthamia graminifolia (L.) Cass. var. major (Michx.) Moldenke — rb; sp; cb
Gaillardia aristata Pursh — os, sm; co; ws
Grindelia squarrosa (Pursh) Dunal var. quasiperennis Lunell — dg, sg; co; ws

Helenium autumnale L.
var. montanum (Nutt.) Fern. rb; sp; cb
Heterotheca villosa (Pursh) Shinners
var. hispida (Hook.) Harms os, sm; sp; cb
Hieracium cynoglossoides Arv.-Touv. os, pf; sp; cb
Lactuca serriola L. rb; sp, we; cb
Lactuca tatarica (L.) C.A. Mey.
ssp. pulchella (Pursh) Stebbins pf, of; co; cb
Leucanthemum vulgare Lam. os, da; sp; cb
Liatris punctata Hook. sg, os; sp; cb
Rudbeckia laciniata L.
var. ampla (A. Nels.) Cronq. mm; sp; cb
Rudbeckia occidentalis Nutt.
var. occidentalis mm; sp; cb
Senecio canus Hook. os, ro; ra; me
Senecio hydrophilus Nutt. rb; sp; cb
Senecio integerrimus Nutt.
var. exaltatus (Nutt.) Cronq. sm, os; sp; cb
Senecio serra Hook. var. serra sm, mm; co; ws
Solidago missouriensis Nutt.
var. fasciculata Holz. sb, sm; sp; cb
Solidago multiradiata Ait.
var. scopulorum Gray pf; co; cb, me
Sonchus arvensis L.
ssp. uliginosus (Bieb.) Nyman rb; sp; cb
Sonchus oleraceus L. rb; sp, lo; cb
Stephanomeria tenuifolia (Torr.) Hall
var. tenuifolia os, ro; co; ws
Tanacetum vulgare L. os, ro; lo, we; cb
Tragopogon dubius Scop. sm, sg; co; cb, me

BETULACEAE
Betula occidentalis Hook. sb; co; cb, me

BORAGINACEAE
Cynoglossum officinale L. sm, os; sp, we; cb
Hackelia deflexa (Wahlenb.) Opiz var.
americana (Gray) Fern. & I.M. Johnst. pf, ro; sp; cb
Hackelia micrantha (Eastw.) J.L. Gentry sm, os; co, lo; cb
Hackelia patens (Nutt.) I.M. Johnst.
var. patens os; sp, lo; me
Lithospermum incisum Lehm. sm; sp; cb
Lithospermum ruderale Dougl. in Lehm. sg; sp; cb
Mertensia ciliata (Torr.) G. Don
var. ciliata sb; co; cb, me
Mertensia oblongifolia (Nutt.) G. Don
var. oblongifolia pf; co; cb, me

BRASSICACEAE
Arabis sparsiflora Nutt. in Torr. & Gray
var. subvillosa (S. Wats.) Rollins of; ra; me
Berteroa incana (L.) DC. dg, sg; sp; cb

Camelina microcarpa Andrz. ex DC. sg; sp; cb
Cardamine breweri S. Wats. var. breweri sb; ra, lo; cb
Descurainia richardsonii (Sweet) O.E. Schulz ssp. viscosa (Rydb.) Detling sm, mm, of; co; cb
Draba nemorosa L. mm; sp; cb
Erucastrum gallicum (Willd.) O.E. Schulz sm, da; sp, we; cb
Erysimum inconspicuum (S. Wats.) MacM. sg; sp; cb
Lepidium densiflorum Schrad. var. macrocarpum Mulligan sg, dg; sp; cb, me
Lepidium virginicum L. var. pubescens (Greene) C.L. Hitchc. sg; co, lo, we; cb
Rorippa palustris (L.) Bess. ssp. hispida (Desv.) Jonsell var. hispida (Desv.) Rydb. rb; sp; cb
Sisymbrium altissimum L. dg, sg, os; sp; ws

CACTACEAE
Opuntia polyacantha Haw. ro, sg; sp; cb

CAMPANULACEAE
Campanula rotundifolia L. os, dg; co; cb

CAPRIFOLIACEAE
Sambucus racemosa L. ssp. pubens (Michx.) House rb, os; co; cb
Symphoricarpos occidentalis Hook. mm, sm, pf; co; ws

CARYOPHYLLACEAE
Arenaria capillaris Poir. ssp. americana Maguire os, dg; co; ws
Cerastium arvense L. os, ro; sp; ws
Cerastium fontanum Baumg. ssp. triviale (Link) Jalas sb, os; sp; cb
Silene alba (P. Mill.) Krause sg, dg; sp; cb

CERATOPHYLLACEAE
Ceratophyllum demersum L. aq, rb; co, lo; cb

CORNACEAE
Cornus sericea L. ssp. occidentalis (Torr. & Gray) Fosberg sb; co, lo; cb

CRASSULACEAE
Sedum lanceolatum Torr. ssp. lanceolatum ro, os; co; ws

FABACEAE
Astragalus canadensis L. var. brevidens (Gandog.) Barneby sm, os; sp; cb
Astragalus crassicarpus Nutt. var. paysonii (E.H. Kelso) Barneby os, sg; co; cb, me
Astragalus lentiginosus Dougl. in Hook. var. platyphyllidius (Rydb.) M.E.Peck os, ro; sp; cb

Glycyrrhiza lepidota Pursh var. glutinosa (Nutt. in Torr. & Gray) S. Wats. — rb; sp; cb
Lupinus arbustus Dougl. ex Lindl. ssp. calcaratus (Kellogg) D. Dunn — sg, os; co; me, he
Lupinus burkei S. Wats. ssp. burkei — sm, os; sp; cb
Lupinus sericeus Pursh var. sericeus — sm, os; sp; cb, me
Medicago lupulina L. — sm, os; sp; cb
Medicago sativa L. — rb; sp; cb
Melilotus alba Medic. — sm, os; sp, we; cb
Melilotus officinalis (L.) Pallas — sm, os; sp, we; cb
Oxytropis lagopus Nutt. var. lagopus — sg; co, lo; cb
Oxytropis sericea Nutt. in Torr. & Gray var. sericea — os, ro; sp; cb
Thermopsis montana Nutt. in Torr. & Gray var. montana — mm; sp; cb
Trifolium longipes Nutt. in Torr. & Gray ssp. reflexum (A. Nels.) Gillett — mm; co; cb, me
Vicia americana Muhl. in Willd. ssp. americana — os, ro; sp; cb

GERANIACEAE

Geranium richardsonii Fisch. & Trautv. — sb; co, lo; cb, me
Geranium viscosissimum Fisch. & Mey. var. viscosissimum — pf; sp; cb, me

GROSSULARIACEAE

Ribes aureum Pursh var. aureum — os, sm; co; ws
Ribes inebrians Lindl. — os, sm; co; ws
Ribes hudsonianum Richards. var. petiolare (Dougl.) Jancz. — sb; sp, lo; cb, me
Ribes setosum Lindl. — os, sm; sp; cb

HYDRANGEACEAE

Philadelphus lewisii Pursh — sm, os; co; ws

HYDROPHYLLACEAE

Hydrophyllum capitatum Dougl. in Benth. var. capitatum — os; sp; me
Phacelia hastata Dougl. in Lehm. ssp. hastata — os; co; ws
Phacelia linearis (Pursh) Holz. — os, ro; sp; me

LAMIACEAE

Agastache urticifolia (Benth.) Kuntze var. urticifolia — sm, os; co; ws
Lycopus asper Greene — rb; sp; cb
Mentha arvensis L. ssp. haplocalyx Briq. — rb; co, lo; cb
Monadra fistulosa L. var. menthifolia (Graham) Fern. — sm, rb; co, lo; cb
Nepeta cataria L. — os, da; sp; cb
Prunella vulgaris L. — mm; sp; cb
Scutellaria galericulata L. — rb; ra; cb

MALVACEAE

Alcea rosea L. sm; co, lo, we; cb
Iliamna rivularis (Dougl. in Hook.) Greene
var. rivularis sm; ra; cb

ONAGRACEAE

Circaea alpina L. sb; co, lo; cb, me
Epilobium angustifolium L. mm; co, lo; cb
Epilobium minutum Lindl. ex Hook. sg; co; ws
Gaura coccinea Pursh sg; sp; cb

PLANTAGINACEAE

Plantago major L. var. major sm, os; sp, we; cb

POLEMONIACEAE

Collomia linearis Nutt. os, ro; co, lo; me
Gilia tenerrima Gray os, ro; sp; ws
Phlox albomarginata M.E. Jones sg; ra; cb

POLYGONACEAE

Eriogonum umbellatum Torr. var. majus Hook. sm, os; co; ws
Polygonum lapathifolium L. rb; sp; cb
Rumex crispus L. sb, mm, sm; co, we; ws
Rumex triangulivalvis (Danser) Rech. f.
var. triangulivalvis os; sp; cb

PORTULACACEAE

Claytonia perfoliata Donn pf, mm; co; ws
Lewisia rediviva Pursh sg, dg; sp; me, he

PRIMULACEAE

Dodecatheon conjugens Greene
var. conjugens pf, sm, os, sg; co; ws
Dodecatheon pulchellum (Raf.) Merr.
ssp. pulchellum sm, os; co; ws
Lysimachia ciliata L. rb; co, lo; cb
Lysimachia thyrsiflora L. rb; ra; cb

RANUNCULACEAE

Actaea rubra (Ait.) Willd. pf, of; co; ws
Aquilegia flavescens S. Wats. pf, sm, os; sp; ws
Clematis occidentalis (Hornem.) DC.
var. grosseserrata (Rydb.) J. Pringle pf, of, os; sp; ws
Clematis lingusticifolia Nutt.
in Torr. & Gray sm, os; co, lo; cb
Delphinium bicolor Nutt. & Wyeth os, ro; co; ws
Delphinium occidentale (S. Wats.) S. Wats.
ssp. occidentale sm; co, lo; cb
Ranunculus abortivus L. rb; sp; cb
Ranunculus acriformis Gray
var. montanensis (Rydb.) L. Benson sb; sp; cb
Ranunculus macounii Britt. rb; co, lo; cb

Ranunculus uncinatus D. Don in G. Don var. uncinatus	sb; ra; cb, me
Thalictrum dasycarpum Fisch. & Lall.	rb; sp; cb
Thalictrum venulosum Trel.	sm, os; sp; cb
ROSACEAE	
Amelanchier alnifolia (Nutt.) Nutt. var. alnifolia	sb, sm; sp; cb
Fragaria vesca L. ssp. bracteata (Heller) Staudt	mm, pf; sp; cb, me
Geum triflorum Pursh var. triflorum	sm, os, sg; sp; ws
Physocarpus malvaceus (Greene) A. Nels.	sm, os; sp; ws
Potentilla anserina L.	rb; ra; cb
Potentilla arguta Pursh	os, ro; sp; cb
Potentilla biennis Greene	sb; sp; cb, me
Potentilla gracilis Dougl. ex Hook. var. flabelliformis (Lehm.) Nutt. in Torr. & Gray	sm; sp; cb
Potentilla pensylvanica L.	sm, os; sp; cb
Prunus virginiana L. var. melanocarpa (A. Nels.) Sarg.	rb, sm; co, lo; cb
Rosa woodsii Lindl. var. ultramontana (S. Wats.) Jepson	sm, os; co; ws
Rubus idaeus L. ssp. sachalinensis (Levl.) Focke	sm, os; co; ws
Rubus parviflorus Nutt.	pf, sm, sb; sp; ws
Spiraea betulifolia Pallas ssp. lucida (Dougl. ex Greene) Taylor & MacBryde	sm, of; sp; ws
RUBIACEAE	
Galium aparine L.	rb, sb; sp; ws
Galium boreale L.	sm, of, os; sp; ws
Galium tricornutum Dandy	sm, os, sb; sp; ws
SALICACEAE	
Salix exigua Nutt.	sm, rb; co, lo; cb
SANTALACEAE	
Comandra umbellata (L.) Nutt. ssp. pallida (A. DC.) Piehl	sg; co, lo; ws
SAXIFRAGACEAE	
Conimitella williamsii (D.C. Eaton) Rydb.	sm; sp; cb, me
Heuchera cylindrica Dougl. in Hook. var. cylindrica	mm; sp, lo; cb
Heuchera flabellifolia Rydb. var. flabellifolia	mm; so, lo; cb
Lithophragma parviflora (Hook.) Nutt. in Torr. & Gray	os, sm, sb; sp; ws

SCROPHULARIACEAE

Castilleja hispida Benth. in Hook.	
ssp. acuta Pennell	sm, os; sp; me
Castilleja miniata Dougl. ex Benth. in Hook.	
var. miniata	sm, pf; sp; cb
Castilleja pallescens (Nutt. ex Gray) Greenm.	sg, dg; sp; ws
Linaria genistifolia (L.) P. Mill.	
ssp. dalmatica (L.) Marie & Petitmengin	os, da; sp; cb
Penstemon attenuatus Dougl. ex Lindl.	
var. pseudoprocerus (Rydb.) Cronq.	sm, os; sp; me
Penstemon nitidus Dougl. ex Benth.	
var. nitidus	os, dg; sp; cb
Verbascum thapsus L.	da, os; co, we; cb
Veronica serpyllifolia L.	
ssp. humifusa (Dickson) Syme	rb; ra; cb

SOLANACEAE

Solanum dulcamara L.	da, rb; sp, we; cb

URTICACEAE

Urtica dioica L. ssp. gracilis (Ait.) Seland.	
var. lyallii (S. Wats.) C.L. Hitchc.	sm, sb; sp; cb, me

VERBENACEAE

Verbena bracteata Lag. & Rodr.	os, da; sp; cb

VIOLACEAE

Viola canadensis L.	
var. corymbosa Nutt. in Torr. & Gray	pf, sb; co; ws
Viola praemorsa Dougl. ex Lindl.	sb; ra; cb

LILIOPSIDA (Monocotyledons)

CYPERACEAE

Carex athrostachya Olney	sb; sp, lo; me
Carex brevior (Dewey) Mack.	rb; co, lo; cb
Carex douglasii Boott	sm, mm; sp; cb
Carex foenea Willd.	sm, os; sp; cb
Carex lanuginosa Michx.	rb; co, lo; cb
Carex nebraskensis Dewey	rb; co, lo; cb
Carex petesata Dewey	os; sp, lo; me
Carex praticola Rydb.	os; ra; me
Carex sprengelii Dewey	sb; sp, lo; cb
Carex vernaculata Bailey	sm; sp; cb
Eleocharis palustris (L.) Roemer & Schultes	rb; co, lo; cb
Scirpus microcarpus Presl	rb; co, lo; cb

IRIDACEAE

Iris missouriensis Nutt.	sm; sp, lo; cb
Sisyrinchium idahoense Bickn.	
var. occidentale (Bickn.) Henderson	sm, os; ra; me

JUNCACEAE

Juncus balticus Willd. var. vallicola Rydb.	rb; co, lo; cb
Juncus filiformis L.	mm, os; sp; cb

LILIACEAE

Allium cernuum Roth	sm, ro; co, lo; cb
Allium textile A. Nels. & J. F. Macbr.	ro, os; sp; cb
Fritillaria atropurpurea Nutt.	mm; co, lo; cb
Smilacina racemosa (L.) Desf.	pf, of; sp; ws
Smilacina stellata (L.) Desf.	sb, pf; co; ws
Streptopus amplexifolius (L.) DC.	
var. chalazatus Fassett	sb; co, lo; cb, me
Zigadenus venenosus S. Wats.	
var. gramineus (Rydb.) Walsh	sm, os; sp; ws

ORCHIDACEAE

Platanthera dilatata (Pursh) Lindl.	
var. dilatata	sb; sp; cb, me

POACEAE

Agropyron trachycaulum (Link) Malte	
var. trachycaulum	sg, dg; co, lo; ws
Agrostis stolonifera L. var. stolonifera	rb; sp; cb
Agrostis thurberiana A.S. Hitchc.	pf; sp; cb, me
Bouteloua gracilis (H.B.K.) Lag.	sg, dg, os; co; ws
Bromus anomalus Rupr.	pf, of; co; ws
Bromus inermis Leyss.	
ssp. pumpellianus (Scribn.) Wagnon	
var. pumpellianus (Scribn.) Wagnon	os; sp, lo; ws
Bromus tectorum L.	os; sp, lo; ws
Calamagrostis canadensis (Michx.) Beauv.	
var. canadensis	mm, sm; sp; cb
Dactylis glomerata L.	rb, sb, sm; sp; cb
Elymus cinereus Scribn. & Merr.	
var. cinereus	sm; co, lo; ws
Festuca idahoensis Elmer	sg, dg; co, lo; ws
Phleum pratense L.	sm, os; co; ws
Poa nervosa (Hook.) Vasey	
var. wheeleri (Vasey) C.L. Hitchc.	sm, os; sp; ws
Poa palustris L.	rb; sp, we; cb
Poa pratensis L.	sm; sp; ws

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